



Nucleic acid encoding a starch R1 phosphorylation protein homolog from maize

Description of Technology: This invention is in the field of plant molecular biology. More specifically, this invention pertains to nucleic acid fragments encoding starch R1 phosphorylation proteins in plants and seeds.

Patent Listing:

1. **US Patent No. 6,620,987**, Issued September 16, 2003, "Nucleic acid encoding a starch R1 phosphorylation protein homolog from maize"

<http://patft.uspto.gov/netacgi/nph-Parser?Sect2=PTO1&Sect2=HITOFF&p=1&u=%2Fnetacgi%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&d=PALL&RefSrch=yes&Query=PN%2F6620987>

Market Potential: Starch is a mixture of two polysaccharides, amylose and amylopectin. Amylose is an unbranched chain of up to several thousand .alpha.-D-glucopyranose units linked by .alpha.-1,4 glycosidic bonds. Amylopectin is a highly branched molecule made up of up to 50,000 .alpha.-D-glucopyranose residues linked by .alpha.-1,4 and .alpha.-1,6 glycosidic bonds. Approximately 5% of the glycosidic linkages in amylopectin are .alpha.-1,6 bonds, which leads to the branched structure of the polymer.

Amylose and amylopectin molecules are organized into granules that are stored in plastids. The starch granules produced by most plants are 15-30% amylose and 70-85% amylopectin. The ratio of amylose to amylopectin and the degree of branching of amylopectin affects the physical and functional properties of the starch. Functional properties, such as viscosity and stability of a gelatinized starch determine the usefulness and hence the value of starches in food and industrial applications.

Accordingly, the availability of nucleic acid sequences encoding all or a portion of R1 proteins in other plants would facilitate studies to better understand starch degradation and provide genetic tools for the manipulation of starch modification, biosynthesis and metabolism in plant cells.

Benefits:

- Provides genetic tools for altering starch
- Positively alter functions in plant cells

Applications:

- Plant molecular biology

Contact: Ken Anderson

Director, Entrepreneurial & Small Business Support, Delaware Economic Development Office (DEDO)
Carvel State Building, 820 French Street, Wilmington, DE, 19801
Phone: (302) 577-8496, Fax: (302) 577-8499, Email: Kenneth.R.Anderson@state.de.us